

Ferndale Road Bridge (Lake Road Bridge)
Over the Peshtigo River
Lake and Grover Townships (Wausaukee Vicinity)
Marinette County
Wisconsin

HAER No. WI-58

HAER
WIS,
38-WASAK.V,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Rocky Mountain Regional Office
Department of the Interior
P.O. Box 25287
Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

Ferndale Road Bridge (Lake Road Bridge)

HAER No. WI-58

HAER
WIS.
38-WASAK.V.

Location: Spanning the Peshtigo River, carrying traffic from North Ferndale Road, between the townships of Lake and Grover, Marinette County, Wisconsin. (Wausaukee Vicinity)

UTM: 16.481950.2556581
Quad: Porterfield

Date of Construction: 1910

Bridge Fabricator: The Elkhart Bridge and Iron Company
Elkhart, Indiana

Present Owner: Townships of Lake and Grover

Present Use: Vehicular and Pedestrian traffic

Significance: The Ferndale Road Bridge is one of the State's longest remaining examples of a Pratt overhead truss bridge. It was built shortly before the advent of the standardized construction methods of the State Highway Commission. The bridge is an excellent example of the design and construction practices of larger bridge fabricators of the period.

Historian: Edwin G. Cordes
for Mead and Hunt Inc.
Madison, Wisconsin
March 1989

The Ferndale Road Bridge, Carrying traffic over the Peshtigo River, connecting the townships of Grover and Lake, is significant in the historical development of Wisconsin bridge building for a number of reasons, including, the bridge is one of the longest Pratt over-head truss spans remaining in the state. The bridge fabricator, The Elkhart Bridge and Iron Company of Elkhart Indiana has been identified as an important and prolific out-of-state builder by the Wisconsin Historic Bridge Advisory Committee.¹ Elkhart Bridge and Iron employed the services of Willis Gifford as its upper Midwest representative. Under Gifford's direction the company erected as many as 100 bridges throughout Wisconsin from early in the century to the 1930's.²

The Ferndale Road Bridge is of simple Pratt overhead truss design. The basic design was patented in 1844 by Thomas and Caleb Pratt. In this design, vertical members act in compression while diagonals act in tension. The Pratt truss, because of its economy and uniformity of design, became one of the most prolific of all bridge designs by the early twentieth century. The regularity of the bridge panels allowed spans to be constructed in reasonable lengths from 25 to 150 feet adapting easily to various locations.³ In comparison to field-riveting of trusses, the simplicity of the various members and pin connections, allowed erection in the field by relatively unskilled workers in short periods of time.⁴

In the Ferndale Road Bridge, rolled steel sections were utilized for the top and bottom chord members, resulting in a "built-up" construction in order to reduce weight and mass and because steel fabricating technology was not as advanced as today.

This reduction in materials as well as the use of steel rather than iron is indicative of the period bridge construction methods from 1895 to 1910. Pin connections are used throughout, and the structure rests on standard expansion roller bearings at its southern end. Punched eye-bar connections are utilized for the bottom chord connection. Built-up vertical members are composed of standard 8" channel irons connected with diagonal stay lacing. Hipped verticals and diagonal tension members are composed of rolled rectangular rods. Diagonals are attached to top and bottom chords by looped eye-bar connections. Counter braces are either single or double looped eye-bars with turnbuckles.

Corrugated metal flooring covered by a bituminous roadway and supported by steel I-beam floor joist, composes the bridge deck. The structure rests on large steel tube abutments. Steel plate retaining walls surround these abutments offering additional support. The upper portal strut at either end of the bridge originally held a plate identifying the Elkhart Bridge and Iron Company as the fabricator, as well as the date of construction, 1910. Both plates have since been removed.

Total length of the nine panel span is 154'10". Although this is as long as any remaining single span Pratt overhead in Wisconsin, longer ones were known to have existed.⁵ Each panel has a length of 16'9". Overall bridge width is 16' with a roadway of just over 15'. The crossing occurs at a narrowing of the Peshtigo River directly along a line separating Sections 25 and 26 and the towns of Lake and Grover.

The location of the bridge and the source of funding for its construction caused considerable problems before the bridge was constructed. A resolution by Marinette supervisor Levi Sandborn, in August of 1908 authorized the acceptance of bids for a 150' bridge with plank flooring, across the Peshtigo river at Lake road. The bridge was to be paid for April 1 the following year, 1909.⁶ A dispute as to the location apparently arose as no further mention of the project is found until the county board minutes of April 1910. At that meeting, a committee of three was chosen by chairman Joseph A. Fabry to decide the exact location.⁷ In a special meeting of the County Board on July 12, 1910, Levi Sandborn, Chairman of the Town of Lake and J.A. Tiedjens, Chairman of the Town of Grover presented a petition authorizing the construction of the bridge along the section line dividing Sec. 25 and 26. The two towns provided \$3,000.00, one half the total cost for construction, the remaining \$3,000.00 was appropriated by the County Board from Marinette County taxes. Supervisors Dahl and L.F. Hale were appointed to oversee the construction.⁸

The bridge contract was awarded to Willis E. Gifford of Madison Wisconsin who was acting as an agent for the Elkhart Bridge and Iron Company, of Elkhart Indiana. This bridge equalled the longest span he ever contracted for however he apparently arranged for repair work on larger structures. Gifford built bridges in the state from 1905 until shortly before the depression. Most of those projects were associated with the Elkhart Bridge and Iron Co. Gifford advertised himself as agent for this company from 1916-

1931.⁹ A more complete history of the Elkhart Bridge and Iron Co. and their relationship with Willis Gifford as well as a history of the Wisconsin State Highway Commission can be found in Edwin Cordes, "The Sprague Bridge", HAER No. WI-57, unpublished report, Historic American Engineering Record, March 1989.

Endnotes

1. Barbara Wyatt, Proj. Dir. Cultural Resource Management in Wisconsin: Vol. 2, State Historical Society of Wisconsin, (June, 1986) pp. 12-14, 12-23, 25. The report details the finds of the committee, and includes details on noteworthy and eligible examples as well as the committee's ranking criteria. The Wisconsin Historic Bridge Advisory Committee has also identified the Ferndale road bridge as one of the state's ten best remaining examples of a Pratt overhead truss.

2. An excellent record of Gifford's bridge work can be found in the family's photographic album. Over 100 bridges are pictured along with dates, locations and sometimes fabricators. The album is in the possession of Robert S. Newbery, Historian, Wisconsin Department of Transportation. Madison, Wisconsin.

3. While spans up to 150 feet were most common, significantly longer single-span Pratt overheads were constructed. A contract and blueprints for 190 foot span over the Crawfish River, near the Town of Milford in Jefferson County, Wisconsin attest to this fact. Contract dated December 4, 1905 between the town and the Wisconsin Bridge & Iron Company can be located at the Milford Town Hall.

4. Boller, Practical Treatise on the Construction of Iron Highway Bridges, pp. 44-49. A discussion of the relative merits of pin-connected vs. riveted truss designs emphasizes the skills and equipment required for field-riveting of structures.

5. Wisconsin records show a contract and blueprints for a 190 foot Pratt located over the Crawfish River near the Town of Milford in Jefferson County. The contract date is December 4, 1905. Longer Pratt single spans have been constructed in other states including at least one 200 foot long by the Elkhart Bridge & Iron Co. in Indiana. Cooper, James L., Iron Monuments to Distant Posterity, An Evaluation of Indiana's Metal Bridges as Cultural Resources. 1987, p. 60. The Montgomery Bridge #88. Other state surveys including Colorado, Pennsylvania, and Washington list Pratt spans significantly longer than 150 feet. Fraser, Clayton. Historic Bridges of Colorado Colorado Department of Highways, 1986. p. 89, the Black Bridge - 219 ft. single span. Historic Highway Bridges in Pennsylvania, Pennsylvania Historical and Museum Commission, Pennsylvania Department of Transportation. 1986. pp. 143-152. Numerous spans ranging from 183 ft. to 215 ft. including T-3, T-10, T-11, T-36, T-46. Historic Bridges and Tunnels in Washington

State, National Register of Historic Places Inventory - Nomination Form. (August 1982), Bridge No. 26 - 189 ft. timber structure.

6. Proceedings of The County Board of Supervisors, Marinette County, (August 1908) pp. 54-55. The resolution stated that the span was to be paid for by a tax levied upon all the taxable property in the county, excluding properties within any incorporated village or city which maintains its own bridges. The method of taxation could possibly have lead to the dispute over the bridges payment and location.

7. Proceedings, County Board of Supervisors, Marinette County, (April 1910) p. 35.

8. Proceedings, The County Board of Supervisors - Marinette County, (July 1910) p. 44.

9. G. R. Angell & Company, Madison City Directory, Vol. 14. 1916, pp. 184, 627; Madison Directory Company, Madison City Directory, 1916, p. 301; Madison City Directory, 1931, p. 326. A photo album of almost all of Gifford's bridge projects, listing locations, dates and sometimes fabricators, is in the possession of Robert S. Newbery, Historian, Wisconsin Department of Transportation. Madison Wisconsin.

Photocopy of historic photograph. View looking north during bridge construction. From the photographic album of W. E. Gifford Sr. Photographer unknown (original print in possession of Robert Newbery, Historian, Wisconsin Department of Transportation, Madison Wisconsin).

